THE VETERINARY RECORD

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The Royal Agricultural Society's Medals.

At the last meeting of Council of the Royal College of Veterinary Surgeons some discussion took place on an intimation that the Royal Agricultural Society would not in future give their medals for cattle pathology on the selection of the examiners of the R.C.V.S. The medal was given for excellence in "the diseases of cattle, sheep, and swine" and was confined to students of the Royal Veterinary College. As we have no separate examination for the diseases of one kind of animal, and as the medal was limited to the graduates of one school, the decision of the R.A.S. is a wise one. At last meeting of the Council of the Royal Agricultural Society the question was settled, as the following extract from the report of proceedings will show. We would just note that the medal is only given to men who "pass the final examination of the R.C.V.S."

"Having considered a set of draft regulations prepared by Sir George Brown and Professor McFadyean for the future annual award of the Society's silver and bronze medals to students of cattle pathology, the committee recommended that these regulations be adopted by the Council, as follows :—

Medals for Students of Cattle Pathology.

1. The Royal Agricultural Society will award annually a silver medal to the student who obtains the highest number of marks, and a bronze medal to the student who obtains the next highest number of marks in a special examination to be held at the close of each session, and who at the immediately ensuing diet of the Examining Board pass the final examination of the Royal College of Veterinary Surgeons.
2. The competition will be open to all students of the Royal Veterinary College, Camden Town, who have completed their course of study, and who are eligible for the final examination of the Royal College of Veterinary Surgeons.
3. The examination will be conducted by the professors of the Royal Veterinary College, and will comprise a written, an oral, and a practical examination.
4. The subjects of the examination will be the diseases of cattle, sheep, and swine, and the dentition of these animals as an indication of age."

The Victoria Benevolent Fund.

The veterinary profession may well feel a sensation of pride at the manner in which the committee of this fund has come forward with subscriptions. For a small body like the veterinary calling to launch a purely charitable scheme with an initial subscription of just over £500 speaks volumes for the good nature and *esprit de corps* of its members. Quite a number of the donations are handsome, and the example set by the committee will doubtless gain many followers when the general appeal is made to the profession. The great majority of us are poor men, and cannot afford to subscribe in bank notes, but no man need hang back lest his contribution should appear small by comparison. The widow's mite was accepted with laudation, and the smallest sum will be received by the "Victoria" fund with gratitude and thanks.

Few know how often a little help is needed by the unfortunate, and how many times the successful practitioner assists a friend in need—perhaps an old college chum, perhaps the widow or orphan of an unsuccessful neighbour.

In future this fund will undertake the work now done by private members, and subscribers will pass on to the executive body the applications personally made for assistance.

The Treasurer and Secretary is certainly the right man in the right place. Mr. Barrett's enthusiasm is only equalled by his sound business methods, and he deserves the credit always given to success.

It is curious how history repeats itself. Few know that a Veterinary Benevolent Fund was attempted 60 years ago. That it was so we have just discovered by the perusal of a little biographical sketch of the late Professor W. J. T. Morton, written by the evergreen Prof. Simonds, and published by Messrs. Adlard. On page 9 we read—"Ever ready to take his part in any good work, Morton wrote to *The Veterinarian* in 1839 suggesting the formation of a Veterinary Benevolent Institution—its officers to be honorary and to consist of a President, twelve vice-presidents, who shall be directors, a treasurer, and secretary. A provisional committee was appointed consisting of Wm. Youatt, H. Daws, J. B. Simonds and Morton. Several meetings of the committee were held, due notices to the profession issued etc., but without success. Indeed the support it received, like many other good and wise propositions, was far too little to warrant any further steps being taken to effect its establishment." One of this original committee remains with us, and sixty years after, Prof. Simonds is a subscriber to the Victoria Fund.

Voluntary Efforts.

We believe great Britain is the only European country that has effectually freed its stock from pleuro-pneumonia and foot-and-mouth disease. Our success has not been due to voluntary effort but to very rigid compulsory methods. Why we should now venture on a new and untried plan is not clear, but it seems that an attempt will be made to reduce the prevalence of tuberculosis by the voluntary use of tuberculin supplied gratuitously. The only explanation of this retrograde step is that we are about to copy instead of lead. We are to try the voluntary system of Denmark.

Other countries than Denmark have a purely voluntary system of treating disease. Belgium has —but it boldly applies to human diseases. From *The North British Agriculturist* we take the following:

"A circular issued by the Belgian Government, states, *inter alia*: Some foreign regulations forbid absolutely the sale of milk coming from houses in which certain contagious diseases, such as typhoid fever, small-pox, scarlatina, or diphtheria, are prevalent. This Government, wishing to avoid any excess of severity, deems itself justified in merely recommending urgently that the milk may be completely isolated from the sick persons, from the persons who nurse them, from the rooms occupied by them, and from the substances or articles which have been in contact with them."

This voluntarily protected milk we are told comes to London, but that is not the point we want to make. We are anticipating a circular from the British Government—something to this effect:—

"The Government, wishing to avoid any excess of severity, deems itself justified in merely recommending that some effort be made to reduce tuberculosis, that tuberculin should be used to diagnose cases, that no diseased animals should be sold, and that diseased milk should not be mixed with healthy. Be good and you will be happy!"

CASES AND ARTICLES.

VENTRAL HERNIA.

By W. S. Mulvey, M.R.C.V.S.

Subject.—A skye terrier bitch.

History.—A swelling on the right side of the abdomen was first noticed about three years ago, and has been gradually increasing in size until admitted to the infirmary on April 7th.

The swelling on examination proved to be a ventral hernia. It was situated on the right flank, just outside the stifle and close to the last teat. The contents of the sac could be easily pushed into the abdominal cavity.

Although no pain was evinced, the size of the swelling, the continual increase in bulk, and the danger of external injury, not to say possibility of strangulation, led me to advise a radical operation for its cure.

Treatment.—Laxative medicine was administered on her arrival, and on the 9th the hair was removed and the skin washed and thoroughly disinfected. She was placed under chloroform, in two minutes after the muzzle was applied she was completely under the influence of the anæsthetic. A small opening was then made into the sac with a scalpel to allow of the introduction of a probe-pointed bistoury, with which an incision, six inches long, was made through the skin. It was then found that there was a large knuckle of intestine together with omentum protruding through an oval shaped opening in the abdominal wall 1½ inches long and about ¾ of an inch in breadth at its widest part. A considerable portion of omentum was removed, and after a little trouble the bowel was returned and held in position by the index finger of the left hand. The opening in the abdominal wall was then sutured with catgut over the finger, gradually withdrawing it as the opening was closed. Eight sutures were placed in the abdominal wall.

After carefully drying all the surrounding parts, the external wound was sutured with iodoform and eucalyptus cord. The skin was then dried and dusted over with boracic acid powder, a pad of antiseptic wool applied and bandaged.

The bitch took rather over half an hour to recover from the effects of the chloroform. The bandage was removed on the second day after the operation, when the wound was found to be perfectly dry and free from discharge, it was dressed with boracic acid and bandaged as before.

On the Thursday, as the bitch was constipated, two 30 minims capsules of ol. ricini were administered and had the desired effect.

She was fed for the first two days after the operation on Leibig's extract and milk; on the third a small quantity of underdone beef chopped fine was given, followed by fish until the 18th, when she was allowed a small feed of "melox." On this date there was a little discharge from the external wound which, however, had almost healed. She eats and drinks well, but was again slightly constipated, this was relieved by the castor oil capsules as before.

A slight discharge escaped from the wound for a few days which, however, gradually cleared, until on the 24th the wound was found to have quite healed, and very little scar was to be discerned. She was allowed a little exercised.

On the 26th the bandage was removed and a coat substituted, having a v. shaped piece to come between the hind legs, a pad of wool being placed over the part that had been operated on. A little exercise was allowed every day.

On manipulation the opening in the abdominal wall was found to have completely closed, and she was sent home in good health and spirits on the 3rd of May.

CONGENITAL DISPLACEMENT OF THE HEART IN A CALF.

By J. A. Thompson, F.R.C.V.S., Lurgan.

The little subject is a shorthorn bull calf, and was a fortnight old when I saw it about a week ago.

The heart appears as a pulsating tumour about the size of a small human fist, situated at the junction of the neck with the trunk in the jugular furrow and immediately in front of the first pair of ribs. The apex is directed towards the throat, and the base towards the chest. The pulsations are rapid, but perfectly regular, and number 144 per minute, as taken at the heart itself, the radial artery, and artery of the tail. The "lubb dupp" sounds produced during each revolution of the natural heart are indistinct, indeed I may say only a single sound can be heard very much like a blend of the two natural ones. The jerking or jumping movements are easily observed, and when the organ is grasped in the hand these are found to be very vigorous indeed; if grasped

too tightly, however, symptoms of syncope at once present themselves.

I may say, in conclusion, that the little animal is otherwise perfectly natural, well developed, and growing as rapidly as one could wish. My not having seen a similar case is my only apology for trespassing at such length.

[This interesting specimen should find its way to some veterinary college where an enthusiastic anatomist might fully describe the condition after dissection.—Ed.]

MALLEIN AND TUBERCULIN.

No closer analogy could exist than that between mallein and tuberculin so far as their preparation, action, and uses are concerned. Both are prepared from specific bacteria, both react in animals suffering from the disease caused by the source from which they are derived, both are harmless to healthy animals. For four years both have been largely used by veterinarians and stockowners in this country. Rather more is known of mallein than of tuberculin. Although both are vouched on overwhelming authority to be reliable aids to diagnosis, mallein is allowed to be rather the most trustworthy. Without mallein and tuberculin the difficulties and cost of suppressing glanders and tuberculosis are almost insuperable; with them success is assured.

What reception is given to these agents by government? Some light is thrown upon the question by reference to the Parliamentary news.

When the President of the Board of Agriculture was asked by Mr. Kearley, M.P., whether he would alter the Glanders Order to enable local authorities to use mallein, the reply was that insufficient knowledge of the agent existed, and that it would be premature to do anything until the experts of the Board had carried out a series of experiments!

When the President of the Board of Agriculture was asked by Mr. Channing, M.P., whether he would provide facilities for the use of tuberculin the reply was that it would first be necessary to consult the agricultural bodies!

Why this difference? Do the experts of the Board know more about tuberculin than mallein? Are no experiments necessary in one case, whilst so essential in the other? If the experience of the whole veterinary profession is acceptable in the case of tuberculin why not in mallein?

To reconcile the difference of treatment meted out to these agents is impossible, unless it is to be supposed that tuberculin is accepted without question because approved by a Commission. If so Mr. Long has a much safer, simpler, and quicker way of gaining knowledge of mallein than by waiting a few years for his experts. A small departmental committee could have evidence in a week of all that concerns mallein. He could, in fact, have all the evidence about mallein that the Commission obtained about tuberculin and from just as capable and experienced witnesses. If Government acts upon its knowledge of tuberculin without further question, it cannot logically or fairly decline to accept mallein—unless it uses its opportunities of gaining knowledge by a committee.

Tuberculosis is a disease new to legislation. Glanders has been under regulations for over twenty years. The one disease only requires the aid of mallein for its speedy extinction, the other will provide work and worry for years to come even with the assistance of tuberculin.

The horse, we know, is not considered by the Royal Agricultural Society as an "agricultural interest," but Mr. Long is a horseman, and his Board has recognised glanders as a "disease" and the horse as "an animal."

Fifteen hundred horses dead from glanders every year is surely worth preventing—and it would be so easy and so economical.

W. H.

ABSTRACTS FROM FOREIGN JOURNALS.

Surgical Treatment of Wind-Sucking in the Horse.

Schwendimann performed section of the sterno-maxillaris muscle upon four horses affected for a long period with wind-sucking. In two of them he transversely incised the muscle, and in the other two the tendon near its superior insertion was divided. The after effects of the operation were insignificant, and the wounds healed by first intention. Unfortunately the results were *nil*, because as soon as the wounds had healed the animals recommenced to wind-suck. The author is of the opinion that this complaint can be carried on without the help of the sterno-maxillaris muscles as, after the operation, these muscles underwent evident atrophy.—*Schweizer Archiv.* Oct., 1897. *Ex. Annales de Méd. Vét., Bruxelles*, May, 1898.

Enzootic Keratitis of the Ox.

MM. P. Le Blanc and E. Thierry say that acute keratitis of the ox is a malady which is manifested by a purulent inflammation of the cornea with or without suppuration. It is often observed in an enzootic state during intense heat, as in the months of July and August.

It is contagious and infectious, and does not last longer than four weeks, and it runs its course at the least in 15 days. It is serious in consequence of it being very contagious and the disorders, which are often irremediable, which it causes to the sight. Various treatments have been lauded. Bissauge advises revulsion around the orbit with a mixture of Stockholm and coal tars or sublimated coal tar. Félizet uses inunctions of opiated oil or henbane and oil. Lermast recommends installations of 1 in 500 solution of sublimate; Möller the following antiseptics: carbolic acid or creolin 1-100, boric acid 2 or 4-100, silver nitrate 1 or 2-100. E. Thierry employs a collyrium composed of permanganate of potassium 3-2000 of tap water applied to eyes of each beast for 5 or 10 minutes three times a day.

Disinfection of the hands of the attendant of the beast should be as complete as possible in order to

prevent propagation of the complaint, and the affected animals should be isolated.—*Jour. de Méd. Vét. et Zoot.*, Sept. and Oct., 1897. *Ex Annales de Méd. Vétérinaire*, May, 1898.

Tenotomy in the Treatment of Metastatic Thickening of the Flexor Tendons.

M. Pflauz, veterinary surgeon at Canth, records an observation of thickening of the tendon following contagious pneumonia in a cart horse. The different modes of treatment, that is to say baths, massage, bandaging, blistering with biniodide of mercury and line firing did not give permanent relief. Several veterinary surgeons failed in their treatment of the case. Lameness disappeared after firing or blistering only to reappear again after being put to work. The horse was considered incurable and was about to be destroyed when M. Pflauz resolved to try tenotomy of which he had read somewhere of its utility in a similar case. He divided the two flexor tendons of the phalanges in the middle of the induration. The operation was very difficult in consequence of the parts being very much swollen and having a hardness almost that of bone.

When the animal regained its feet the fetlock almost rested on the ground, and this necessitated the use of slings for eight days. From this date recovery set in rapidly, and three weeks later the lameness had almost completely disappeared. At the end of a few weeks the horse was submitted to light exercise and was ultimately gradually put to regular work, cure being definitely maintained.—*Berlin. Thier. Woch.*, Jan. 20th, 1898. *Ex Annales de Méd. Vét., Bruxelles*, May, 1898.

Contagious Dry Eczema Affecting the Neck, Withers, Back, and Thighs of Horses.

M. Alix says the disease presents three degrees. The first is characterised by slight itchiness and formation of small crusts. At the second period the crusts shed, leaving denuded surfaces of the dimensions of a lentil which run into and become confounded with one another. The third degree is evidenced by large depilated surfaces dotted with scab and erosions, and the skin is wrinkled but rarely thickened.

The two first periods occupy from 8 to 15 days, and if the disease is arrested there it lasts one or two months; but if it attains the third degree it may last two, three, or more months. Recurrence is frequent. Its course is favoured by the cold weather. The complaint being contagious differentiates it from chronic dry eczema.

Prognosis is favourable if the disease is only considered from its influence upon the general health; it is serious if we take into account the facility of the contagion and frequent recurrences which lead to prolonged loss of service of the affected animals. The essential cause is contagion. The parasitic agent has not been isolated notwithstanding the numerous researches made. The complaint is conveyed by brushes, combs, harness, rugs, etc., and by direct contact.

Prophylactic treatment consisted in clipping all the horses, isolation of the affected and suspected, disinfection of the stables, harness, and dressing appliances.

Curative treatment consisted in the use of washing with soap and water, disinfection with 2 to 5 per cent of sublimate, inunctions with vaseline or carbolised glycerin, or mixture of glycerine, water and chloral. Arsenic given internally was of no use.—(*Rec. d'Alfort, Feb., 1898, ex Journ. Méd. Vét. et Zoot Avril, 1898.*

Plugging (?) of the Deep Arteries of the Forelimb in two Horses—Recovery.

Prof. Siedamgrotzky, of Dresden, relates two cases of the above occurring in two race-horses causing lameness in the fore limb resembling paralysis of the radial nerve. At rest the animals did not show any local or general disturbance, but on walking and at the commencement of trotting no lameness was present; when they were kept trotting on loose or sandy ground the following symptoms were observed: the affected limb balancing itself like a pendulum was incompletely extended and easily flexed; if the trot was prolonged the limb was more flexed and lameness appeared; both horses perspired very much and were very excitable. When at rest and the limb raised the shoulder trembled in consequence of the violent contraction of the olecranon muscles, in the vicinity of these the skin was dry, whereas around them it was wet with perspiration. Pulsation of the arteries of the limb was *not* diminished, and the temperature of the hoofs was the same as those of the sound limbs. A quarter to half an hour after rest all these symptoms disappeared and the movements became normal. There was no diminution of sensibility of the radial nerve cutaneous distribution.

Treatment consisted of resting both horses in a box, mashes, roots, and green food given and 30 grammes (about 7½ drachms) of carbonate of potassium administered daily, and massage of the limbs with camphorated alcohol was performed daily. Both cases completely recovered within the space of three months—*Sachs Vét. Bericht ex Journ. Méd. Vét. et de Zoot, Avril, 1898.*

H. G.

Illnesses of the Horse due to Fatigue.—By Army Veterinary Surgeon Bartke.

Albrecht has already published an article on colic due to fatigue. Recently these illnesses, due to fatigue, have come into prominence, because the effectiveness of the carbines and guns depend to a great extent on the quickness and endurance of the cavalry and artillery horses. It has been proved that the horse, by judicious and suitable training, is capable of performances not generally suspected, and on the other hand faulty and injudicious treatment bring about severe disturbance of health.

After excessive trotting and galloping on hard roads frequent cases of founder arise, in which the horse is at first affected with great weariness, and after 12 to 24 hours rest inflammation of the laminæ makes its appearance.

The most frequent illness due to fatigue is that which is designated in literature as congestion of the lungs and heart, acute heart insufficiency, or pul-

monary apoplexy. It arises in sultry weather after over-exertion, and also in cold weather after long distance riding. In the ride from Vienna to Berlin perhaps the greatest number of horses fell victims to this fatigue illness. The appearances, duration and result of the illness are very diverse. In most, exhaustion is first evident. The animals try to go forward but are unable to do so. They break out into a sweat, breathe hard, have a quick pulse, and die of suffocation within half an hour.

On post-mortem one finds hyperæmia and œdema of the lungs, dark turgid blood in the heart, as well as the characteristic signs of death from suffocation. Other animals die in 48 hours. Here the appearances of the illness can be noticed better. Brought into the stall some sick ones lie down, and with difficulty stand up again. Others, when standing, avoid all movement and appear sometimes as if suffering from brain trouble. Muscular tremors in the breast and croup may be evident, or in some cases swelling of the limbs. The number of respirations increases until death ends the scene, usually from 38 to 80 per minute and very shallow. Pulse 70 to 100, becoming smaller, harder, and more thready. Heart beats arhythmic and unequal, mucous membrane of eyelid at first brick red and later cyanotic. In many cases diminution of peristalsis, thin pulpy reddish coloured dung, in some cases colicky unrest. Such horses would frequently be judged as suffering from colic if it were not for the extreme decrepitude characterising their sufferings.

On post-mortem these horses show much the same appearances only that there is more frequently hyperæmia of the mucous membrane of the intestine and œdema of the glottis. A small percentage of cases recover, quickly in some instances, slowly in others, often from 4 to 8 days after the appearance of the exhaustion before pulse and breathing fall to normal, and in some cases 14 days.

Less frequently one encounters gastritis as a fatigue illness. Such has, however, been noticed after severe manœuvres and after long-distance riding in winter. Such horses reject both food and drink in resting intervals, but besides weariness show no striking symptoms. On continuation of work they soon become very weary, void pulpy fæces, can only be brought to the journey's end with trouble; lie down heavily, breathing accelerated and groaning, have frequent hard pulse and cyanotic mucous membranes of eyelids. All these animals exhibit continual unrest, and death follows in 6 to 18 hours after reaching the stable.

Post-mortem. Œdema of the lungs, hæmorrhagic inflammation of the stomach, and hæmorrhages under the pleura and peritoneum.

Bartke has further noticed two cases which are best described with those of Dieckerhoff as acute muscular degeneration in consequence of severe over-exertion. One case occurred after a distance ride and the other after 3 days hard riding in the snow. The horses could no longer travel and had to be led into the stall, where the one lay apathetically till it died after 48 hours, whilst the other which died in about 36 hours showed a kind of epileptiform seizure, with muscles as hard as a board, imperceptible pulse, no response to prick with a pin, and a temperature of 40·2 C. In both cases there were considerable changes in the heart and muscles. The muscles were discoloured, dull, friable, dry and as if cooked.

Amongst these different powerful effects of over exertion there seem to be distinctions. It appears that by continuous quick exertion affections of the heart and lungs arise; by gradually induced fatigue inflammations of the intestinal tract occur. Also acute muscular degeneration occurs if one suddenly changes from prolonged slow exertion to quick work.

For treatment stimulating means have been used, *e.g.*, alcohol, camphor, ether, caffeine in small frequent doses. It is questionable whether the appearances of unrest depend on pain in the intestinal canal or whether they are not chiefly due to muscular pain. —*Deutsche Thierarzt. Woch.*

G. M.

ELECTION ADDRESSES.

To the Fellows and Members of The Royal College of Veterinary Surgeons.

GENTLEMEN,

During the past four years I have had the honour of being one of your representatives on the Council. I trust that my record of attendances at Council and Committee meetings will show that I have not neglected the important duties which have been entrusted to me. The period for which I was elected has expired and I again come before you and respectfully ask for your vote. If re-elected I shall use all my efforts for the good government and advancement of our profession as heretofore.

The Public Health (Scotland) Act has recognised and done justice to our qualifications as experts in the examination of meat, etc. I shall certainly advocate and support the extension of similar provisions with respect to England and Ireland.

I am of opinion that veterinary surgeons should be exempted from serving on Juries.

I have the honour of being this year the nominee of the Lancashire Veterinary Medical Society.—I am, gentlemen, your obedient servant.

JOSESPH ABSON, F.R.C.V.S.

Norfolk St., Sheffield.
May 10th, 1898.

To the Fellows and Members of The Royal College of Veterinary Surgeons.

GENTLEMEN,

I have now had the pleasure of serving you on the Council for seven years and am willing to continue that service if you desire it. I consider it a great honour to represent you, and if elected will do all I can to deserve the confidence thus reposed in me.

I am far from satisfied with our treatment by the Board of Agriculture, and think that we should keep "pegging away" until the Veterinary Department is distinct, independant, and solely responsible for deal-

ing with contagious diseases in animals. Our relation to the said Board should be analogous to that of the A.V.D. to the War Office. I heartily congratulate our colleagues in the Army, and their success ought to encourage us to persevere until our capacity for service is as fully recognised and appreciated as theirs.

I think bye-law 113 should be so modified as to enable the Council to restrict advertising more completely than is now possible.

I believe every man ought to be prepared and willing to discharge all the duties of a loyal citizen, but at the same time I do not think we ought, all things considered, to be asked to serve on juries. I would support any measure adopted to secure our exemption.

I have the honour to be, gentlemen, your obedient servant,

J. FRASER, F.R.C.V.S.

St. Albans, May 9th, 1898.

VICTORIA VETERINARY BENEVOLENT FUND.

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EXTRACTS AND NOTES.

DEPUTATION AS TO SHEEP SCAB.

A deputation from the National Sheep Breeders' Association waited upon Mr. Walter H. Long, President of the Board of Agriculture, at the end of April, to lay before him the views of this body in respect to the administration of the Sheep Scab Order, 1895, and submit their suggestions as to the future course of action of the Board of Agriculture.

Mr. JEFFREYS, M.P., who undertook to introduce the deputation, informed Mr. Long that they represented breeders of the whole of the principal breeds of English sheep. Therefore he was sure that he would recognise the importance of the interests represented. That the continued existence of sheep scab was a thing that all regretted would be admitted, and so long as it continued it would constitute a grave danger to the interests of all flockowners. He strongly urged that the present Sheep Scab Order should be made compulsory and not permissive as at present, and also that the Board should send down one of their own inspectors wherever an outbreak occurred to inquire into all the facts respecting the same, and to urge the local authorities to take action. He also urged that the central authorities should investigate as many cases as possible, and urge local authorities not only to cleanse the flock but to take all precautions that every means of transmission of the disease should be thoroughly disinfected, especially the hurdles, which he suggested should be burnt.

Mr. E. ELLIS, President of the National Sheep Breeders' Association, called attention to the fact that on October 22nd last the body he had the honour to represent sent a memorial to the Minister of Agriculture stating that it was their opinion that if the Order of 1895 were made compulsory instead of permissive the disease would in all probability be stamped out. To-day, however, they went a little further than that, for the matter was one of vital importance to the interests that they represented. And after mature consideration they had come to request that the present Order should be carried out by the central authority instead of as at the present time by the local authorities.

Mr. A. AMOS said that throughout the district from which he came there was a unanimous feeling in favour of compulsory dipping once a year at least; at the Canterbury Farmers' Club a resolution was recently unanimously carried to that effect; the meeting being, in fact, in favour of still more stringent measures. What the deputation wanted was such steps being taken, never minding the temporary inconvenience, that would secure their flocks freedom from this disease, which, as had been said, existed only in those whose owners were not as careful as they ought to be, for, as the President, Mr. E. Ellis, had stated, they knew of no case in any registered flock of sheep.

Mr. TOM CASSWELL agreed that it was useless to rely upon the local authorities to carry out the provisions of the Order, which to be done effectually would have to be done by the central authority. With respect to compulsory dipping, he knew from experience that if such a course were adopted it would be the means of conferring a great and lasting benefit upon all concerned.

Mr. LONG in his reply said? I am very much obliged to you for putting your views before me so clearly and so briefly. I can assure you that I appreciate fully the desire that has led you to come here—namely, that a disease of this character, which is obviously a very obnoxious one, should, if possible, be eradicated altogether. What you have asked us here to-day to do is, in the first place, to make the duty of the local authorities to carry out the regulations in our Order compulsory instead of voluntary. In the second place, my friend Mr. Jeffreys suggests that we should send some of our inspectors to find out the facts with regard to the outbreaks when they occur. The third suggestion is that dipping once a year should be made compulsory. I do not go into that last suggestion, because you know much more about the natural history of this question than I do; but I believe that there are some practical difficulties in some parts of the country in enforcing an Order of that kind, though there is no doubt whatever that if it were universally enforced it would do a very vast amount of good, and would go a long way in the direction which you desire that we should follow. I believe that all the evidence points to the fact that this disease is curable, and I confess that I think that it would be advantageous if in the first instance you could bring the weight of your personal influence in your individual localities and counties to bear upon the local authorities, because, after all, what is the naked truth? I dare say that the members of the local authorities will not like what I am going to say. The truth is very often unpalatable, notwithstanding that it is necessary that it should be sometimes plainly stated. The local authorities undoubtedly, as you have said here to-day, and as the gentlemen who have spoken have shown by their speeches, have got in our Order of 1895, if they would only carefully and effectually carry it out, ample means by which they may eradicate this disease and prevent its spread. I would ask you whether it is not possible in the first instance to bring pressure to bear upon the local

authorities and ask them to do some of this unpalatable work, and insist upon it. The truth is that they are afraid of doing it because they are afraid of becoming unpopular. I must say that I think that in a case like this they ought first of all to be approached, and it is possible that the deputation which has come here to-day, and the speeches which have been made, may do something in that direction, and may draw the attention of the county councils to the duties which they ought to perform under this Order. If I find that the local authorities are not bestirring themselves and are not taking the fullest advantage of the Order which we have issued, then I can go further and make a representation to the local authority and call their attention to the importance of exercising to the full the powers which they possess with a view to getting rid of the disease. Although it has been suggested that the law ought to be strengthened, I do not know whether that means the general law under which we exercise our powers and issue our orders, or whether it means that the Order itself requires strengthening. If there is anything in the Order which we can alter to make the powers of the local authority more efficient I shall be glad to consider any suggestion in that direction. There are many practical difficulties which are apparent to you, and which I need not go into now, in the way of the Department taking the matter over and being able to hold out any real prospect of success. You know yourselves how difficult it is for us to deal with a somewhat similar disease to which reference has been made—swine fever. The great difficulty, of course, in these diseases, which affect sheep and swine is the extraordinary facility for the conveyance of infection, and the extraordinary difficulty in securing the enforcement of regulations which you impose unless you have an army of officials to carry them out. We are obliged to depend, of course, on the local authorities, and the officers of the local authorities, who are the police, and though I am happy to say that we have met with a great measure of success in dealing with diseases in the country; still, it would not be right for us to undertake the duty unless we were fairly satisfied that we saw that in undertaking it we should be in a reasonable time successful. I shall be very happy to assist in any way I can in awakening the local authorities to a sense of their responsibilities; and if we find that it is necessary to further strengthen the original regulations, you may be perfectly certain that we shall be ready to listen to suggestions with regard to that matter.

Mr. JEFFREYS thanked Mr. Long for the sympathetic way in which he had received the deputation, and for his able speech. He also acknowledged Mr. Long's courtesy in receiving the deputation at an hour which was somewhat inconvenient to him.

PROFESSOR SCHENCK'S RESEARCHES ON THE PREDETERMINATION OF SEX.

In view of the fact that Professor Schenck's conclusions as to the power of artificially determining the sex of offspring have served as a nine-days wonder to some of the lay papers, it seems advisable to lay before our readers a plain statement of his argument, taken without comment from the pamphlet which he has just published.[1] It opens with the statement that it is impossible to command natural processes, but possible by scientific means to exercise a more or less effectual influence upon them, in order to extract from them the best possible results. His essay falls into three parts—a summary of the writings of his predecessors, an account of his own researches and deductions, and finally a description of the method of treatment he has devised, with illustrative cases.

In the development of an embryo the generative organs are at first indifferent—hermaphrodite; in the further process of growth one set develops while the other atrophies. This tendency must be predetermined from the time of fertilisation, for each cell formed from the ovum must have sexual characters, since these are not confined to the generative organs, but appertain to the whole body. The readiness with which an ovum can be fertilised depends upon its position in the ovary, the thickness of its envelope, etc., and these may also have a bearing on the question of sex. In other words, the predermination may precede fertilisation, and of this confirmation is found in the development of bees and in the production of male and female flowers by plants under different nutritive conditions. In this connection Professor Schenck enunciates and discusses at considerable length the views of previous writers. He points out that the male sex preponderates to a definite though slight degree in the total number of births, and that the sex of a child is more likely to be that of its older parent He pays particular attention to the theory of crossed sexual heredity, by which each sex tends to propagate the other. Thus if the sexual power of the male be greater a female offspring is more likely to result, and *vice versa*. This theory is threshed out most thoroughly and with abundance of quotations and examples; in the end Professor Schenck practically accepts it, and makes us of it in his further work. With regard to the influence of environment upon sex, he quotes Robin's statement that in warm climates females preponderate, in cold and unfavourable males. Born also showed that 95 per cent. of artificially fertilised frogs' eggs hatched out as females, this being an effect of nutritive conditions acting after fertilisation. Thury's researches are fully analysed, and are stated to have originally called Professor Schenck's attention to the subject. Thury found that cattle fertilised at the beginning of "heat" threw more females, at the end more males. This he explained by the degree of ripeness of the ovum, but Professor Schenck accounts for it on the crossed inheritance theory, the sexual power of the female being at its greatest at the end of the period of rut. This part of the work is summed up in the statement that the sex of offspring largely depends upon the state of nutrition of the parents, particularly that of the mother during pregnancy. During this period the difference between intake and excretion represents the food of the embryo, and hence requires special attention. The temperature is slightly raised owing to oxidation processes, which entail a considerable consumption of red blood corpuscles and consequent diminution of hæmoglobin.

The second section begins with the enunciation of the fact observed in domestic animals and in insects that the better the mother is nourished the more females she produces, the number of males remaining practically constant. This influence upon the fœtus *in utero* has received but little attention from the practical point of view, and Professor Schenck consequently set out upon a series of observations based on the theory of crossed sexual inheritance. He first investigated the excreta, and particularly the carbohydrates of the urine. The presence of a certain amount of sugar, which is commonly recognisable by the phenyl-hydrazine test in perfectly normal individuals indicates incompleteness of the oxidation processes, whereby a certain quantity of heat is lost to the body. This physiological output of carbohydrate is in the male sex most marked during the period of growth—that is, between the ages of 14 and

[1] *Einfluss auf das Geschlechtsverhältnis.* Von Dr. Leopold Schenck, Professor an der k.k. Univeritä und Vorstand des Institutes für Embryologie in Wien. Magdeburgh: Schallehn and Woolbrück. 1898.

19. In women there is no corresponding increase, but small quantities may appear in the urine before and after menstruation, while Iwanoff and others have shown that glycosuria is common in pregnant and parturient women. Now the amount of sugar normally excreted is equal in men and women, but more significant in the latter owing to the lesser activity of their metabolic processes. For the perfect ripening of the ovum it is necessary that oxidation shall be perfect—that is, that no sugar shall be left unburnt. Where there is a remainder of unburnt sugar the ovum stands a chance of being less ripe, and less well nourished. Hence the properties of its protoplasm are less well developed, and by the theory of crossed inheritance it is more likely to produce a female child. On the other hand, when the urine is free from sugar the ovum can attain perfect development, and give rise to male offspring. It is upon this cardinal principle that Professor Schenck's theory is based. He holds that a prolonged course of appropriate nourishment both before and after fertilisation will tend to the conception of male children only.

The next question is of the means to be adopted to ensure this end. If a male child is desired, and the maternal urine contains no sugar, but abundance of reducing substances (particularly the lævo-rotatory glycuronic acid) he allows impregnation forthwith. If, on the other hand, sugar is present, it must be removed, and the reducing substances increased before fecundation may take place. It is found that the urine of a woman pregnant with a boy contains more reducing substances than that of one with a girl. We need not enter into the details of the diet recommended, beyond saying that it contains a large amount of proteid, which seems to be required by a male embryo.

Finally Professor Schenck gives what may be called his clinical results. He quotes numerous cases to show that the bearing of female children is associated with glycosuria. In such instances he recommends a diet comprising plenty of proteid and fat, and as little carbohydrate as can be tolerated; this must be taken for two or three months before and three months after impregnation. He gives one example in which six boys were born in succession under this treatment, and a girl immediately it was relaxed; and others in which boys were born after repeated births of girls before the treatment. In all, out of seven recorded cases, six were successful. He concludes that the nutrition of the mother plays a most important part in the determination of sex, and that in countries where much flesh is consumed there is a marked preponderance of male children. This can be imitated artificially, but it is far more important to ensure the completeness of oxidation processes in the body. As long as the combustion of the food is perfect, and the urine is totally free from sugar, the exact amount of meat consumed is of secondary importance. The birth of male children can thus, in certain cases, be predetermined, but the voluntary production of girls is a problem as yet unsolved.—*The Brit. Med. Jour.*

THE RELATIONSHIP OF VARIOLA AND VACCINIA.

(Extract from paper read by Dr. J. Monckton Copeman, M.A., M.D., Cantab., M.R.C.P., Lond.

Although it is clear from Jenner's writings that he believed vaccinia to be nothing more or less than "small-pox of the cow" his theory appears not to have received general support even in his own day, and from that time onwards the value of the practice of vaccination has by some been impugned on the plea that inoculation of one disease, "cow-pox," could not be expected to exert any really protective influence against the ravages of small-pox, a disease supposed by them to be of totally different origin. And if the thesis of essential difference between these maladies were capable of demonstration no doubt the objection would be of considerable weight; for there exists but little well-authenticated evidence that the living virus of one disease is capable when inoculated into an animal of affording protection against the effects of inoculation of the virus of another and totally different disease, although no doubt when two different viruses are inoculated at nearly one and the same time the incubation period of one or other of them may be modified as to duration.

In his first paper Jenner, as has been said, advanced the thesis that small-pox and cow-pox are identical; but even at the present day controversy wages hotly around this question and it still awaits a definite solution. There can, however, be no objection to our speaking of vaccinia as "one with small-pox," since it matters little from our present point of view whether small-pox on its transference from man to the bovine animal becomes actually transformed or, as some would maintain, merely modified. During the long period which has now elapsed since the introduction of vaccination many observers have set themselves the task of attempting by experimental methods to solve the problem of the true relationship of variola to vaccinia. These attempts have all been directed to the possibility of giving rise to cow-pox by the introduction in one or another manner of the virus of small-pox into the system of the bovine animal. In the great majority of such attempts, which are vastly more numerous than is generally supposed, the results have been entirely negative, although so numerous have been the experimenters who from time to time have attacked the problem that the total number of instances in which an apparently successful result has been obtained is now considerable. As far as I am aware the first recorded experiments are those of Gassner, of Gunzburg, in 1801, who succeeded after no less than ten fruitless attempts in directly inoculating a cow with small-pox virus. The lymph thus obtained was employed for the vaccination of four children, from whom seventeen others were subsequently vaccinated. None of these exhibited any signs of small-pox. Viborg, of Copenhagen, in 1807, is stated to have also been successful in variolating the cow. Basil Theille, of Kasan, twice (in 1836 and 1837 respectively) succeeded in inoculating the cow with small-pox matter and in vaccinating children with the lymph thus obtained. In the light of recent work on this subject his conclusions are of much interest. As stated by himself they are: (1) the so-called vaccine disease is not an eruptive disease peculiar to the cow, but it is produced in it by the transmission of human small-pox to it, and the man and not the cow, as has hitherto been thought, is the source of the disease; (2) the mild disease thus caused in the cow can by direct transmission from the cow to man produce in him as mild a disease, which gives protection against the natural small-pox. Theile also describes a method by which he claimed to have brought about such modification of small-pox virus as to render benign its action on the human subject without the intermediate stage of implantation on the tissues of the cow. The altered potency of the material was brought about, according to his statement, by first keeping the small-pox lymph for a period of ten days between two slips of glass, after which milk was added to it, and the resulting mixture employed for the vaccination of children. The same process was carried through with the lymph obtained from the first and following series of children vaccinated, until after ten generations addition of milk was found to be no longer necessary.

Ceely, in February, 1839, inoculated three sturks with variolous lymph, with the result that in two of the three he eventually obtained in due course what he considered to be vaccine-vesicles. From these, lymph stocks were established which at one time came into such extensive

use that in the course of a few months at least a couple of thousand children had been vaccinated therefrom. In his paper recording these experiments he states that on former occasions, even though working purposely at different times of the year, he had altogether failed in attempts to variolate the cow. In order to test the measure of protection afforded to these children by his variola-descended lymph Ceely tried on a number of them the effect of subsequent inoculation at varying intervals of time from their vaccination. In no case did he obtain any greater result locally than on the authority of Willan is known to have attended the test inoculations employed by Jenner and Woodville.

Unfortunately, owing to the particular methods used by Ceely in his variolous inoculations of cows some doubt is thrown on the value of the results obtained by him. He was, according to his own account, working simultaneously with both variolous and vaccine lymph, so that it is difficult to excluded the possibility that his instruments may have unintentionally served to convey the infection of both diseases at one and the same time.

There surely has seldom been so indefatigable a repeater of experiments as Badcock, the Brighton chemist, who during a period of about twenty-five years performed more than five hundred variolous inoculations. In December, 1840, Badcock, who had commenced his work without knowledge of Ceely's slightly earlier work, first succeeded in variolating a cow from which he carried on a stock of what was indistinguishable from genuine vaccine lymph. Although he subsequently met with similar success on no less than thirty-seven separate occasions, the difficulty and uncertainty of the work will be appreciated on consideration of the fact that those experiments which eventuated in success represent but 7 per cent. of the total number. The lymph obtained by Badcock as the result of his variolation experiments has been largely employed; he supplied it to hundreds of medical practitioners and many thousands of children are said to have been successfully vaccinated with it. About twelve years (1852) after Badcock had obtained his first successful result two American physicians, Adams and Putnam, were equally fortunate and were able in consequence, as reported at the time in a Boston daily paper, to furnish all the vaccine matter requisite for use in the city and neighbourhood

In 1865 a commission appointed by the Society of Medical Sciences at Lyons, having Chauveau as its head. reported the results of a comprehensive series of experiments carried out by it during the two preceding years, the results of which were completely at variance with those obtained by previous investigators. These results have been admirably summarised in the Report of the English Royal Commission on Vaccination. "Inoculation of the cow or heifer with small-pox matter in any one of the thirty animals used did not give rise to a vaccine vesicle; nevertheless, a definite result was obtained, in the form, however, not of a vesicle, but of a thickening and inflammation of the wound. When a puncture had been made this became a papule; lymph squeezed from such a papule and inserted into a second animal gave rise to a like papule, and this, again, might be used for a third animal, but often failed, and the effect could, in no case, be carried on through more than three or four removes. When the inoculation was repeated on an animal on which a previous inoculation had produced such a papule no distinct papule was formed; and, moreover, lymph squeezed from the seat of the latter inoculation produced no effect at all when used for the subsequent inoculation of another animal. There is evidence that the development of the papule was the result of the specific action of the virus. This inference is strengthened by the fact that no such papule was produced by the Lyons Commission when the small-pox matter was inserted into an animal which had previously had cow-pox naturally or artificially, as well as by the fact that when an attempt was made to vaccinate, with vaccine lymph of proved efficacy, an animal on which a papule had been so developed by inoculation with small-pox matter, the vaccination failed, though the animal had never had natural cow-pox or been vaccinated. The specific nature of the lymph of the 'Lyons' papule is held to be shown by the fact that such lymph, when used on the human subject, gave rise to small-pox. On the other hand it has been urged that in this case the virus producing the effect was simply the original small-pox matter used in the inoculation producing the papule and still clinging to the wound. This, however, is considered to be disproved by the experience that lymph from a 'Lyons' papule of the second remove also gave rise in the human subject to small-pox. Thus Chauveau and his Commission found that small-pox implanted in the bovine animal gave rise to a specific effect which was not cow-pox but was of the nature of small-pox, though its manifestations in the cow were different from those of small-pox in man."

A few years earlier, in 1860, Martin of Boston, U.S.A., appears to have had a somewhat similar experience, as about fifty persons vaccinated by him from vesicles raised on a cow's udder by inoculation of variolous matter taken from a pock on the body of a man who had died from the disorder were nearly all attacked with small-pox and three died.

Voigt, the director of the Hamburg Vaccine Establishment, in 1881 brought into extensive use, not only in Hamburg but also in other parts of Germany, a strain of lymph of variolous origin. In the early summer of that year he inoculated three calves with lymph obtained from a case of small-pox. In two of these the operation was apparently unsucessful, in view of which it is of interest to note the fact that all three calves were afterwards found to be insusceptible to vaccination. In the third calf a single vesicle appeared on the site of one out of five incisions made on the left side of the perineum. Voigt adds, however, that this same animal had been vaccinated in one small place in the right hypochondrium (for what reason is not obvious) and that at this point a normal vesicle developed. Voigt does not consider that this fact invalidates the apparent success of his experiment, for the reason that, as he says, the lymph derived from what he considers as the variolous source, proved to be more potent as regards its observed effects on children and calves than the Beaugency vaccine lymph which he had in current use at the time his experiment was carried out. Both Chauveau and Berthel have, on the other hand, expressed the opinion that Voigt's variolo-vaccine is merely a continuation of the strain of animal vaccine previously employed in Hamburgh.

In 1885 Dr. Simpson succeeded in an attempt to inoculate a cow with small-pox lymph obtained from a young vaccinated girl, but as far as I am aware he did not publish the details of this experiment at the time. Dr. Cory, to whom Simpson sent points charged from the cow on the sixth day after inoculation, has recorded the results following on their use in his recent volume on "Vaccination." Three days after receiving the points Dr. Cory employed them at the Animal Vaccine Establishment, Lamb's Conduit Street, for the vaccination of a young male calf. Three out of five insertions made with the lymph resulted in vesicles indistinguishable from those produced by the current lymph of the establishment. A second calf and also a child were therefore vaccinated from the first calf with successful results in each instance, although in the calf only six vesicles resulted from seventeen insertions of the lymph. From this calf a continuous series of calf vaccinations were carried on during a period of six months. With the

lymph obtained from these animals, 79 in number, no less than 1247 children were vaccinated, 1174 of whom afforded an insertion success of 98·4 per cent.

In 1886 and 1890 Fischer, the director of the Institute for Vaccination at Carlsruhe, obtained two strains of variolo-vaccine as the result of inoculation of calves with human small-pox lymph. In the first series Fischer inoculated a young female calf which he took into the small-pox ward of the Pforzheim Hospital for this purpose. Typical vaccine vesicles had developed on the sixth day, the lymph from which was carried on through twelve generations in the calf, after which it was successfully employed for the vaccination of children. Fischer states that the initial experiment of his second series was carried out in the Carlsruhe Institute, but that the animal was placed in a separate stable and that every precaution was adopted to secure freedom from vaccine contaminations. In this calf directly inoculated with small-pox lymph he again obtained, as in his experiments of four years previously, a vesicular eruption having the characteristic appearance of ordinary vaccinia. With lymph taken at the third remove from this calf he vaccinated his own grandson with complete success, and the strain which has now been continued through a very large number of animals has now been brought by Fischer into general use.

Surgeon-Major King, in 1889, being then stationed at Madras, inoculated a young bull-calf with fifth-day small-pox lymph obtained from a child suffering from the disease. On the eighth day after the inoculation a crop of vesicles made their appearance, not at points of insertion, but some little distance away, from the lymph obtained from which another calf was then inoculated. In this calf again secondary vesicles appeared, but in addition vesicles also formed at each point of insertion of the lymph. The lymph stock was carried on through three more generations in calves, the vesicular eruption being now in each instance strictly localised to the points of insertion. With lymph obtained from the fifth calf of the series a number of children were vaccinated successfully. Dr. Simpson reports that from the stock thus established by Surgeon-Major King 4240 British and native soldiers have subsequently been vaccinated and also a very large number of the native civil population with most gratifying results, the percentages of success being much above that obtained from the lymph previously in use. For reasons which are unknown to me Surgeon-Major King's investigation appears to have been regarded with disfavour by the Government of Madras, by whom he was ordered back to his regiment and deprived of his special emoluments. Subsequently, however, this injustice was repaired by the reinstatement of Surgeon-Major King in his former position as Director of Vaccination in his Presidency.

In May, 1892, Dr. Hime published the results obtained by him in a single experiment on variolation. The lymph employed for inoculation of the first calf was collected from a semi-confluent case of small-pox in a previously vaccinated woman thirty-seven years of age. No details are given as to where the experiment was conducted, but presumably it was the private establishment from which Dr. Hime supplies vaccine lymph, as he makes the statement that "the calf was placed on the ordinary vaccination table used for these animals." A number of skin incisions were made, into which the variolous lymph was inserted. Of these incisions all subsequently healed, being on the sixth day only "detectable to the touch by a slight roughness"; several "pocks," however, developed at points, for the most part distinct from any of the incisions, and material taken from these on the ninth day of inoculation was employed for the direct inoculation of another calf. All the incisions made on this second calf had "taken" on the fifth day, when lymph was collected in tubes and pulp removed by scraping. Some of the latter made into "conserve" with glycerine was sent to Fischer, of Carlsruhe, who obtained excellent results with it on a calf from which children were in turn successfully vaccinated. Dr. Hime also himself vaccinated a child with a capillary tube of the lymph in two insertions at each of which points a typical vesicle presented itself on the eighth day.

The largest amount of research work in this direction during recent years is that of MM. Haccius and Eternod (1893), of whom the former is the Director of the Swiss Vaccinal Institute at Lancy, Geneva, where the work was carried out. M. Haccius gives an account of no less than seven successful series of experiments, in each of which a strain of variolous lymph, obtained in the first instance from the human being, was carried on from calf to calf through, in some instances, as many as six or seven removes. The general result was that by the second or at the most the third remove the effect produced was altogether indistinguishable from that which we are accustomed to see in a calf that has been successfully vaccinated. With the lymph of the fifth or sixth remove a number of previously unprotected children were vaccinated with unfailing success. The resulting vesicles could in no way be distinguished from ordinary vaccination vesicles of equal age. The total number of animals employed in these experiments is not mentioned, but from certain statements in M. Haccius's publication one gathers that it was very considerable. It is obvious, therefore, that the Lancy experience as to the small proportion of success to failures is similar to that of other observers. It is worthy of note also that in those animals in which inoculation of variolous matter appears to have been attended with success no definite vesiculation was ever observed at the site of any of the punctures or incisions that were made. The usual result in the first remove from the human being was either a single vesicle or group of vesicular points on the site of a scarification or denudation of the skin. It is particularly stated that every precaution was taken, as, for instance, by the sterilisation of the lancet before each operation, to prevent the accidental transmission of vaccinia.

Dr. Klein, who in 1879 had obtained in thirty-one trials what then appeared to be mere negative results, renewed his investigations in 1892, employing now calves for inoculation experiments instead of milch cows, as in his earlier attempts. Having procured at the hospital ships off Dartford lymph from the vesicles of two cases of confluent small-pox, one at the sixth and the other at the seventh day after appearance of the rash, this lymph was on the same day inoculated by linear cutaneous incisions on two calves at the Brown Institution. The inoculation of one of these calves afforded no indication of success, but on the other calf he obtained a local result in the groin, which, however, consisted not of a distinct vesicle but merely a thickening and redness together with a linear crust at the site of certain of the incisions into which small-pox lymph had been introduced. Lymph pressed from the thickened wound when inoculated into a second calf produced also by the fifth day a like but rather more marked result, while the thickening and redness still further increased as the process was repeated in a third and fourth calf. In none of these animals was there any appearance of vesiculation At this stage the fourth calf of the series was removed to Lamb's Conduit Street, where Dr. Cory, with material obtained by clamping and scraping the thickened incisions, on the seventh day vaccinated an infant in five separate insertions with complete success. Each of these presented on the eighth day appearances characteristic of vaccinia. Moreover, Dr. Cory, who kept the child under observation from first to last, was unable to detect in the course of the disorder any deviation from the condition of affairs normal to vaccinia. "Crusts"

from the arm of this child were preserved and utilised after being mashed up in sterile salt solution for the retro-vaccination of another calf. In due course there resulted in about half of the total number of incisions vesiculation of a character not to be distinguished from that current in the calves vaccinated in the ordinary course at the Lamb's Conduit Street station. Finally, after a lapse of six weeks, Dr. Klein submitted this retro-vaccinated calf and other calves vaccinated from it to the test of a further and thorough vaccination with current calf lymph and with the result that all these animals entirely resisted vaccinia. I have learnt privately from Dr. Klein that in his former (1879) experiments on cows he in more than one instance obtained results somewhat similar to those witnessed in the calf on which his more recent successful inoculation was performed. He suggested at the time the advisability of attempting a transference to a second animal, but Ceely, who was superintending the experiments, insisted on the necessity of obtaining a vesicle in the first animal inoculated as the only criterion of success and the suggestion was therefore overruled. For his own satisfaction, however, Dr. Klein endeavoured to vaccinate one of the cows which had shown some local reaction, but entirely without result, the animal apparently being immune.

Of my own experiments I have obtained an undoubtedly successful result in one series only out of four attempts, but I have at any rate been able to satisfy myself that it is possible to variolate the calf, and, further, that the result obtained in the first instance may become greatly modified in the course of successive removes; and, again, that animals which have been thus treated are no longer susceptible to vaccination.

I may, perhaps, mention here that all my experiments were conducted at the Brown Institution to avoid any possibility of contamination with vaccinia; that, as a further precaution, new scalpels were used, which were invariably first carefully sterilised in a flame; that before and after use the table was thoroughly washed with carbolic acid and hot water and during the intervals of use kept exposed to the open air.

The Royal Commission on Vaccination, in the section of their report dealing with the question of the relationship of variola and vaccinia, shows that the various series of inoculation experiments, of which I have given a brief account, fall into one or other of three categories. The first category includes the experiments of Thiele, Ceely, Badcock, Voigt, Haccius and Eternod, King, Simpson, Hime, and others. In these experiments "inoculation of small-pox matter into the udder or adjoining parts of the bovine animal gave rise at or near the site of inoculation to a vesicle either identical in visible characters with the ordinary vaccine vesicle produced by inoculation with the matter of cow-pox or to a vesicle the features of which, while not corresponding wholly with those of a perfect vaccine vesicle, so closely resembled it as to justify the recognition of the vesicle as a vaccine vesicle. Also it includes experiments in which, though the local result had not the characters of a perfect vaccine vesicle, yet lymph from it when carried through a second or third remove in the cow or calf presented results fully manifesting those characters and when again transferred to man gave results indistinguishable from the ordinary vaccine vesicles." In the second category are placed the experiments of Dr. Klein and myself. In no instance did either of us obtain any appearance of vesiculation in the animals directly inoculated with small-pox virus, although the appearance of the eruption tended to resemble more and more that typical of vaccinia the further the remove, through a series of calves, from the original strain. In the third category are included the practically negative results of the Lyons Commission obtained by Chauveau and his fellow-workers. A brief account of these has already been set out.

With the exception, then, of Martin and of Chauveau and his colleagues of the Lyons Commission all the observers mentioned claim to have obtained positive results—in a certain number of their experiments at any rate—as regards the production of typical vaccinia after one or more removes as the result of variolation of the cow or calf. By no one, apparently, has success been attained invariably, but it is among the experiments of the earlier observers especially, who made use for the most part of heifers and milch cows, that the largest proportion of abortive attempts are to be met with. Subsequent experience has shown that success is much more likely to be attained if calves be used instead of heifers or cows. In this way, perhaps, Chauveau's somewhat anomalous results may be in part explained.

With reference to recent experiments on variolation of the calf it is worthy of note that, as previously mentioned, different observers have obtained local effects in that animal which in different calves of a series have varied considerably. The final result has, however, after a greater or less number of removes from calf to calf, been invariably the same—namely, a local vesicle is produced which by no means at our command, such as the appearance and course thereof or the protective power of the lymph derived therefrom, is distinguishable from true vaccinia.

Although practically there is unanimity of opinion among those who have worked at this subject it must be confessed that, seeing the conditions under which they were carried out, many, particularly of the earlier experiments, are of little worth. Some of the main objections are based on the fact that experiments on this subject have almost without exception been performed in establishments devoted to the continuous cultivation of vaccinia, on the use concomitantly of vaccine and of variolous lymph on the same animal, and on the want of care as to the cleanliness and freedom from vaccine contamination of lancets and "points" used in the experiments. Objection of similar sort against the variolations of the calf which have been achieved in recent years is hardly valid. In some of the more recent cases, at least, special precautions have been taken to ensure that the instruments and table were sterilised and to render the environment of the animal such as to afford no likelihood of the communication of vaccinia. Most especially was this so as regards Dr. Klein's investigations and my own. The number of successful cases which have been recorded is now so large that it is difficult to believe that sources of fallacy of the above sort should have been present in every instance, and it is therefore well-nigh impossible to resist the conclusion that a change of small-pox into vaccinia must really have come about.

Nevertheless there are found even at the present day those who, like Juhel and Dupuy (1894) and Layet (1895), maintain the essential duality of variola and vaccinia. It is, however, difficult to understand how the results obtained, by the last-mentioned especially, can bear the interpretation he would place upon them, seeing that he obtained as the result of inoculating heifers with small pox lymph a vesicular eruption, the lymph derived from which reproduced the disease on other heifers. Moreover, subsequent vaccination of all his series of animals was either abortive or wholly without result.

Hervieux (1895), the director of the Vaccine Institute attached to the Académie de Médecine, takes up a similar position to that of Layet and his collaborators, Le Dantec and Benech. He asserts that the only point of similarity between variola and vaccinia which has been brought forward by those who believe in the relationship of these disorders is the likeness between the vesicles which are found in either case, and denies that this point forms any argument in favour of their identity. He also considers that the use of lymph of

variolous origin is fraught with danger, and so doubtless it may be when that employed is derived—as in Chauvean's and Martin's cases, for instance—directly from the animal first inoculated.

If, as I believe, it can be conclusively proved that small-pox lymph, by passing through the system of the calf, can be so altered in character as to become deprived of its power of causing a generalised eruption, while inducing at the site of inoculation a vesicle indistinguishable from a typical vaccine vesicle, and, more important still, if it be shown that when transferred again to man it has, by such treatment, completely lost its former power to produce a general disease, it may fairly be asserted that cow-pox—or rather that artificially inoculated form of the disease which we term vaccinia—is nothing more nor less than variola modified by transmission through the bovine animal. Perhaps the most reasonable interpretation of such results may be that small-pox and vaccinia are both of them descended from a common stock—from an ancestor, for instance, which resembled vaccinia far more than it resembled small-pox. It is conceivable, indeed, that the seeming vaccinia obtained in the calf by inoculation of small-pox matter into that animal may, after all, be but a reversion to an antecedent type; and in this connection we may call to mind a fact of universal experience—namely, that vaccinia, however it may have arisen in the past or is made to appear in the present, exhibits little tendency to "sport" (as, for instance, by manifesting a "generalised eruption") in the direction of small-pox.

Mr. Picton and Dr. Collins, in their addendum to the report of the Royal Commission on Vaccination, lay much stress on the want of "evidence to show that inoculation of the pox of the cow on the human skin has ever produced small-pox." Variola and vaccinia may, nevertheless, have a common ancestry, since it is not unlikely that variola may have departed widely from the original type and have gained an exalted virulence by repeated passage through man under conditions favourable to its propagation and activity. If this evolution of the disease has, in fact, taken place, variola may have suddenly reverted under greatly changed conditions (as, for instance, implantation on the bovine animal) to an ancestral type. But the reverse process—*i.e.*, sudden "sport" of vaccinia in the direction of small-pox—is not to be expected. It is most unlikely that a less differentiated form (cow-pox), also emanating from the common ancestral stock, should attain to the most exalted virulence in a single individual and *per saltum* declare itself as small-pox, as the dissentient Commissioners insist that it ought to do.—*The Lancet.*

Personal.

Mr. HAROLD SESSIONS, F.R.C.V.S., F.H.A.S., &c., has been appointed lecturer in veterinary hygiene at the Agricultural College, Uckfield, Sussex, and entered on his duties at the commencement of the term, May 1st.

Mr. THOMAS BOWHILL, late Professor of Bacteriology, University of California, U.S.A., has opened a Bacteriological Laboratory, 29, Chambers Street, Edinburgh. Practical classes for students of agriculture, brewing, &c. will be given.

SIR JOSEPH FAYRER, Bart., K.C.S.I., M.D., L.L.D., F.R.S., has accepted the Presidency of the 17th Congress of the Sanitary Institute to be held in Birmingham, commencing September 27th.

ELECTION OF COUNCIL.

The following is the list of candidates for election:—

Abson, J.	Mason, A. W.	FitzWygram, Sir F.
Nunn, J. A.	Dollar, J. A. W.	Duck, F.
Fraser, J.	Awde, W.	Allen, Chas.
Trigger, R. C.	Penberthy, J.	

There are nine vacancies and four new candidates, so that if all the retiring members are re-elected there will be room for two new ones.

The ballot papers will be sent out on the 19th inst.

Votes are lost by leaving in the list more than nine names and, shocking to say, by gentlemen returning the paper in an unstamped envelope.

ARMY VETERINARY DEPARTMENT.

Vet.-Lieut. Cranford joined at Dublin for duty with 13th Hussars, 4th instant.

Vet.-Lieut. A. G. Todd arrived at Aldershot for duty on 2nd instant.

Vet.-Lieut. H. J. Axe embarked for India 6th instant for a tour of service in that country.

Vet.-Lieut. H. C. Harris embarked for india on above date, on return from sick leave of absence.

CORRESPONDENCE

A VETERINARY CONFERENCE.

Dear Sir,

In connection with the Congress of "The Royal Institute of Public Health" to be held in Dublin in August next, it has been arranged to have a "conference of veterinarians" to consider and discuss "Tuberculosis in its relation to Public Health."

We are instructed by the Committee of this Conference to ask your assistance in bringing the matter before the profession with a view to obtaining the assistance of those who can conveniently render it.

Briefly enumerated the salient points it is proposed to bring before the Conference are:—

1. The urgent necessity for a more thorough, and law enforced system of veterinary hygienic inspection.

2. Suggestion of practical measures for the increased employment of "Tuberculin," obviously relegating its control and use to duly qualified practitioners.

3. Plain words of advice to breeders, showing them the enormous pecuniary gain of eradicating this disease, collaterally with the good thus conferred on public health.

The report of the Royal Commission on Tuberculosis, just published, definitely establishes its transmissability to man by affected meat or milk.

It is hoped to arouse the British public from its strange apathy to its own interests, and indifference to the labours of our profession.

With this view we solicit the active assistance of your valuable and widely read journal.—We are, dear sir, yours obediently,

ILES MATTHEWS, F.R.C.V.S., F.R.G.S.
R. B. FREEMAN, M.R.C.V.S.
Hon. Secs. to Veterinary Conference.

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED:—Major Iles Matthews, Messrs. J. Worsley, H. Gray, A. Watson, J. Fraser, W. F. Barrett.

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